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UNITED STATES BUREAU OF MINES
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## (THE BUREAU AND THE SOUTH)

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# HOW CAN THE BUREAU OF MINES MOST EFFECTIVELY SERVE MINING? [1]

## (THE BUREAU AND THE SOUTH)

By Milton H. Fies [2]

To present some idea as to how the Bureau of Mines may most effectively serve mining, it is necessary that we make some résumé of its past accomplishments in order to determine what, if any, changes will be of greatest service to the industry and to the nation.

There are a great many times in life when one begins to wonder whether or not Emerson, in his famous epigram about "mousetraps" and "beaten paths" and "final recognition of intrinsic worth", took into account the item of time. The intrinsic value of any movement, of any work, of any accomplishment will ultimately be recognized, of that there is no doubt, but many a man in history has gone to his end in martyrdom because the world was slow in the acknowledgment of the true excellence of his worth, and this is likewise true of institutions.

All of us, I am sure, are unanimous in one criticism of the Bureau of Mines and that is that it has been too modest. If there is any Department of the Government in Washington today that is in need of a publicity agent, it is the Bureau of Mines, and, if such a press agent were established in the Bureau, I know of no one in a similar post in Washington who would have a finer field in which to display his talents.

But, the Bureau of Mines has no publicity agent, and it is my understanding that its function in the Government has been to some extent minimized and that there is a possibility of its being relegated to some subordinate position within some other Bureau. And I am here from the South - that portion of our country which has ever been the protestant thruout our nation's history - to remonstrate, in a spirit of reason and in a spirit of fairness toward the Bureau of Mines, against any such movement.

In his book, "Looking Forward", the President of the United States makes the statement "that the achievement of good government is a long, slow task, persuading, leading, sacrificing, teaching always, because perhaps the greatest duty of statesmanship is to educate". That word "educate", as I take it, was used by him in a broad sense, and while there probably is a vast difference between the work of a coal miner, an oil driller, or an ore mucker, and the duty of a statesman, the education of the coal miner and the oil driller and the ore mucker along the right road makes easier the work of the statesman.

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[1] Reprinted from The Mining Congress Journal, January 1934 (vol. 20, no. 1, pp. 40-42).

[2] Vice president, DeBardeleben Coal Corporation, Birmingham, Ala.

No man questions the fact that it is the duty of the government to educate. As far as the South is concerned, there has been no agency of the Federal Government that has contributed as much toward the education of the mass of the workers in industry as has the Bureau of Mines. The volume of knowledge which the Bureau has carried to the citizenship of this country today has by no means been confined to that which interests the worker, nor has the benefit derived been limited to this class of our people. Its schools for superintendents and foremen, its technical research, its economic branch, mineral statistics, experimental stations, and its explosives experimentation, have provided a source of knowledge for the management of interested industries which is without parallel in the history of any other similar Bureau in the world.

From the view-point of the South, the Bureau of Mines in the future can most effectively serve in that section by a continuation of the sound policies which it has pursued in the past. I do not mean to convey the impression that it cannot improve in some instances the character of its services, as I shall point out later, but the point I wish to emphasize is that fundamentally and for results achieved, the work of the Bureau during its past history has been effective and vital.

Let us consider the matter of the Bureau of Mines from a less-provincial standpoint and regard its achievement in the important matter of national safety in industry. In the Safety Division alone of the U. S. Bureau of Mines, more than 755,000 (or over three-quarters of a million) men have been trained in first-aid and mine rescue work, 400,000 of them having been trained in the last four years.

To June 30th, of this year, 100 percent first-aid certificates had been issued to 1,037 industrial plants. In the year ending June 30, 1933, 230 such certificates involved the training of 38,852 persons. During that same year 958 mining officials completed the accident-prevention course, and nearly 600 others took portions of the course. Since the inception of this course, 4,411 bituminous coal-mine officials have completed the full course.

During the fiscal year ending 1933, first-aid instructors' certificates were issued to 625 men in Pennsylvania, 161 in Kentucky, and 108 in Alabama. First-aid training given to from 70,000 to 100,000 men annually in industry has resulted in the saving of at least 200 lives annually, and many reliable industrial organizations place the ratio of the relative safety of a first-aid-trained man to an untrained man at from one to four to as much as from one to eight.

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If I may incidentally refer to another section of the country, you have no doubt noted the splendid progress shown by the State of Pennsylvania. And, without any thought to in any way disparage the fine work of the Department of Mines for that State, I think it may safely be stated that through the cooperation of Mr. Glasgow and the Bureau of Mines the added training of workers in the State of Pennsylvania has aided in making possible the wonderful accomplishment in that State in the past few years.

Consider the accident record of the United States as compared to the larger coal-producing foreign countries, such as Great Britain, France, Belgium, and Prussia. Our country shows more favorably on basis of fatalities per million short tons of coal produced, but our record on basis of severity, that is, per thousand 300-day employees, is not as satisfactory as in the countries mentioned.

The unfavorable comparison on basis of severity and the favorable comparison on basis of tons produced can be explained, I think, to some extent, on the ground that we produce more coal per man, have larger seams, greater amount of machinery, etc., which condition helps our fatality record on basis of tons produced and at the same time harms our record on basis of severity, for the reason that we have fewer men employed to produce a given number of tons. We should not be satisfied with the situation as it relates to our severity record; and its improvement, with all its humane aspects, can be realized largely thru the activities of a Federal agency that serves the whole country, and the Bureau of Mines is the agency to bring this about.

It is not my purpose to narrow this discussion to mining. The Bureau of Mines might well be termed a "Bureau of Industry", because it has not confined its efforts to mining alone, but, throughout the nation, wherever and whenever called upon, it has given of itself freely, for all types of industry, whether it be refineries, cement plants, steel mills, or other types of manufacturing plants, particularly as to safety.

But, to get back to the South. Consider the results obtained along safety lines in the States of Alabama, Florida, Tennessee, Louisiana, Georgia, Mississippi, and North and South Carolina, wherein the activities of the Bureau have been marked by splendid achievement.

In Georgia, Alabama, and Tennessee, alone, for the year 1922, the estimated cost of accidents in coal mines was $1,060,000, or 4½ cents per ton of coal produced. In 1932, the cost was $135,000, or, roughly, 1.2 cents per ton. From July 1, 1910 to June 30, 1933, in Alabama there were 43,351 trained in first aid and rescue, and in that same period in the three States mentioned, including Alabama, there were 70,988 trained in first aid, 4,301 in mine rescue, or a grand total of, roughly, 75,000. In these same States, from 1930 to 1933, inclusive, there were 130 plants that made it compulsory for 100 percent of their employees to be trained in first aid. From the year 1931, to date, the Bureau of Mines has trained in these Southern States, as instructors - men qualified to help others - a total of 501.

The average number of fatalities in Alabama coal mines from 1922 to 1926, inclusive, was 129, with 170,000 tons produced per fatality; 1927 to 1931, inclusive, there were 64 fatalities per year, with average production of coal per fatality at approximately 291,000 tons; whereas, in the year 1932, there were only 18 fatalities with production of 472,000 tons per fatality.

Assuming the cost of a fatality to be $5,000, first-aid training effects a saving of $1,000,000 annually to mining companies. In Alabama, for the period 1922-1926, on this basis the annual average cost of coal-mine fatalities was $645,000; for the period 1927-1931, the cost was $320,000; and in 1932, $90,000. The efforts of the Bureau in cooperation with the State Mining Department and the Alabama Mining Institute were largely responsible for this annual saving of $325,000 in the first two periods mentioned.

Recent Bureau of Mines statistics indicate that one person in every six engaged in mining is injured every year. Therefore, about 16,500 of the 100,000 persons trained in first aid each year should receive an injury. If training reduces accidents 35 percent, which we would judge to be a conservative estimate from the ratios given above, the annual reduction would be 5,600 due to the Bureau's first-aid training. Assuming a cost of $100 per accident, the saving is about $560,000. In Alabama, in 1932, it may have been expected that 3,500 persons would be injured and the average cost would be $350,000. If 35 percent of the 5,836 persons trained in first aid were prevented from receiving an injury, then the reduction for 1932 would be 2,042 less injuries and at $100 per accident the estimated saving is $204,200. First-aid training was then responsible for this saving in Alabama alone.

The savings in money and misery accrue, not only to mine employees but to the mining industry and to the general public, through first aid rendered by Bureau-trained men.

The economic saving and the accidents prevented through the instruction in accident prevention, through the safety inspections and reports, through the special investigations, and through the analysis of mine air, dust, and coal samples, cannot be estimated; but the cooperation of the Bureau of Mines with the States, mining societies and institutes, and the individual companies has aided materially in reducing cost of accidents and mining. The value of organized safety, such as advocated by the Holmes Safety Association, has been widely acknowledged, though the cost has not been evaluated to show the saving to the industry.

The work of the Holmes Safety Association in the South has been of special interest, particularly in the rural sections at isolated mines and it has, moreover, been of unusual value to the negro miner. It will be interesting to you who come from other sections of the country to know that the negro Holmes chapters, held separately of course from the white chapters, are looked upon by the negro in somewhat the same manner as he looks upon his lodge. They take the work seriously and it has been of great educational worth to them.

I do not mean to depreciate the contribution of the Holmes Safety Association to our native white miners in the South, but it has been an interesting study, as far as race psychology goes, to us who are interested in the negro, to observe his attitude.

There is one company attentive to its safety record, that has made a comparative study of accidents to negroes and whites. At its mines, at which about 35 percent of the total number of employees are negroes with about 50 percent of the face workers negroes, for the years 1931, 1932, and through November 1933, the following record is interesting:

| | Percent | |
|---|---|---|
| | White | Colored |
| Employees | 65 | 35 |
| Disabling injuries | 73 | 27 |
| Compensable injuries | 76 | 24 |
| Noncompensable injuries | 69 | 31 |
| Days lost | 81 | 19 |
| Cost of compensation | 83 | 17 |

The safety bulletins issued by the Bureau have been instructive not only from a safety standpoint but, rather, informative generally. Many of our underprivileged men have been able to learn about mine gases, mine timbering, and other valuable technical data which they would not have been able to acquire without the assistance of the Bureau.

It may not be amiss to state that the Holmes Safety Association work was inaugurated in Alabama in 1923 and at that time there were approximately 40 chapters organized, which, if I recall correctly, constituted a majority of all such chapters in all the States of the Union. On June 30, 1933, there were 58 chapters operating in the State.

I trust that I may be pardoned for the pride I possess in Alabama's safety achievement, and while I do not propose to bore you unduly with statistics, I think that the table showing the comparison of Alabama fatality rates with those of the United States as a whole, from 1911 to 1932, inclusive, is a matter of much interest as it relates to the Bureau of Mines, for the reason that since its inception I doubt if there is a State in the Union that has appreciated its worth to any greater extent than has the State of Alabama. Every individual therein interested in coal mining knows of the great contribution made by the Bureau in the reduction of fatalities due to gas and dust explosions in coal mines. Its research work and its method of education among the mining men of the State have been invaluable.

### Comparison of Alabama fatality rates with that of the United States as a whole, 1911 to 1932, inclusive

| Year | Number killed | | Deaths per million tons | | Tons per fatality | |
|---|---|---|---|---|---|---|
| | Ala. | U. S. | Ala. | U. S. | Ala. | U. S. |
| 1911 | 209 | 2,656 | 13.92 | 5.35 | 71,827 | 186,887 |
| 1912 | 121 | 2,419 | 7.35 | 4.53 | 136,471 | 220,945 |
| 1913 | 124 | 2,785 | 6.92 | 4.89 | 144.413 | 204,685 |
| 1914 | 137 | 2,454 | 8.82 | 4.78 | 123,222 | 209,261 |
| 1915 | 63 | 2,269 | 4.13 | 4.27 | 242,331 | 234,297 |
| 1916 | 118 | 2,226 | 6.47 | 3.77 | 154,531 | 265,094 |
| 1917 | 109 | 2,696 | 5.34 | 4.14 | 187,298 | 241,618 |
| 1918 | 110 | 2,580 | 5.63 | 3.80 | 177,473 | 262,873 |
| 1919 | 93 | 2,323 | 5.83 | 4.19 | 171,277 | 238,464 |
| 1920 | 78 | 2,272 | 4.48 | 3.45 | 222,967 | 289,729 |
| 1921 | 80 | 1,995 | 6.14 | 3.94 | 162,668 | 253,832 |
| 1922 | 183 | 1,984 | 9.76 | 4.16 | 102,501 | 240,399 |
| 1923 | 89 | 2,462 | 4.25 | 3.74 | 235,014 | 267,223 |
| 1924 | 77 | 2,402 | 3.92 | 4.20 | 254,752 | 237,974 |
| 1925 | 162 | 2,234 | 7.93 | 3.84 | 125,979 | 260,461 |
| 1926 | 139 | 2,518 | 6.46 | 3.83 | 254,739 | 261,241 |
| 1927 | 93 | 2,231 | 4.66 | 3.73 | 217,106 | 267,978 |
| 1928 | 67 | 2,176 | 3.71 | 3.78 | 269,494 | 264,749 |
| 1929 | 72 | 2,187 | 3.91 | 3.59 | 255,667 | 278,380 |
| 1930 | 61 | 2,014 | 3.81 | 3.79 | 262,416 | 263,869 |
| 1931 | 26 | 1,430 | 2.15 | 3.27 | 470,000 | 296,000 |
| 1932 | 18 | 923 | 2.17 | 3.02 | 460,000 | 331,167 |
| Total | 2,229 | 49,236 | 127.74 | 88.06 | 4,602,146 | 5,577,126 |
| Average | 101 | 2,238 | 5.81 | 4.00 | 209,188 | 253,506 |

Consider the Bureau's accomplishment in the reduction of fatalities from dust and gas explosions, from the standpoint of Alabama again. In the ten years, 1911-1920, there was an average of 34.3 fatalities per year from this cause; for the period 1921 to 1930, inclusive, 26 fatalities per year, and for the last three years there have been only 3 fatalities from this source, all in the year 1931.

Consider this phase of the Bureau's accomplishment from the standpoint of Alabama, again. In the ten years, 1911-1920, there was an average of 34.3. fatalities per year from gas and dust explosions; for the period 1921 to 1930, inclusive, 26 fatalities per year; and for the last three years there have been only 3 fatalities from this source, all in the year 1931.

Not only has the Bureau, in its study of gas and dust explosions, rendered effective aid to all interested in coal mining in America, but its efforts have contributed much toward the reduction of accidents from this source among all the nations of the earth where coal is mined.

Here is an organization which has served the mining industry, petroleum and allied interests, and has rendered aid to all industry when called upon, at a minimum expense to the Government. The value of mine and metal products is approximately six billion dollars annually. The expense of the Bureau's operation as compared to the annual production value of the industries it serves is, I believe, less than any other department of the Government.

Surely, those who have in mind reducing the services of the Bureau of Mines, either by reduced expenditure within the Bureau or curtailing its personnel, do not realize that never in its history has the Bureau a greater opportunity to render valuable service to industry and the nation along economic lines than at the present time. The whole setup of the successful working out of the Coal Code depends largely upon the establishment of differentials in the various grades of coal based upon the quality of the many seams. These quality values must be determined by sampling and analyses of the various seams, and for this service the agency in which all coal operators have the greatest confidence is the Bureau of Mines.

We are living in an age of so-called long-range planning. The disruption of the relation of production with consumption and mal-distribution of products is the basis of our ills. The statistical department of the Bureau, with its experience and its compiled data as they relate to all mining, is essentially invaluable. As far as coal is concerned, there is no agency anywhere in the land that has even comparable knowledge as to market conditions, competitive fuels, distribution of fuels, and all those valuable facts which can aid in making possible our national recovery as it relates to these great basic industries and to the part which they will play in the Nation's recovery.

There can be no long-range planning for the coal industry without recognition of the fact that in the chemistry of coal lies the ultimate salvation of the industry. Unless our Government is alive to the possibilities in the relationship of coal to organic chemistry, the future progress of this country may be seriously impeded. The research department of the Bureau of Mines has not only kept pace with the investigations conducted in foreign countries, where more extensive research has been carried on, but has contributed in no small measure to research work in this country.

But, since I am to suggest the most effective manner in which the Bureau can serve mining, I would stress this point more than any other. There should be an enlargement in its activities and its policy as it relates to research in the chemistry of coal.

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There is very little to criticise in the scope and general plan of the Bureau of Mines. Certainly all of us agree that fundamentally its conception of its own duties is sound. And, as stated, it needs, in my opinion, only stressing and emphasizing and enlarging the work which it has done, rather than any radical change in its policies.

Summarizing, briefly, intenxive work in research, continuation of its fine safety and health policies and the enlarging and broadening of its statistical bureau, including comparative analyses of various coals in the several fields, will be of immeasurable value to industry and through it to the nation.

It may not be amiss to state, and I think that as an engineer I may be able to make the statement without criticism, that engineers in a great many instances are faddists and, frankly, present quite a few abnormalities. In otherewords, many of us - to be charitable - possess certain eccentric characteristics, and I think this describes adequately engineers in and out of the Bureau, particularly out of the Bureau. And, where there has been professional difference of opinion in the past, due to such individual eccentricies, we should guard against them in the future so that we may obtain the full measure of value from the Bureau. We have been too prone to criticise unimportant details, prompted largely by personal feelings, and we should be big enough to cooperate with the Bureau on the basis of its broad ideals and forget our own, and their, idiosyncrasies.

Those of us in the South who believe in the Bureau, and we are legion, stand ready now and at any time to carry on the struggle for its individual existence with all the fullness of our strength.

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